CLAIMS

of a present image from a previous image, the method comprising:

selecting a predetermined pattern of pixels in the previous image;

computing a difference measure for each of a plurality of pixel blocks in the previous image to form a plurality of difference measures using the predetermined pattern of pixels;

selecting an origin block from the plurality of pixel blocks having a lowest difference measure; and

computing the motion vector using the origin block and the macroblock.

- 2. The method of Claim 1, wherein the predetermined pattern of pixels includes less than or equal to half of the pixels in the previous image.
- 3. The method of Claim 1, wherein the predetermined pattern of pixels includes a fourth of the pixels of the previous image.
- 4. The method of claim 1, wherein the y-coordinate modulo four of each pixel in the predetermined pattern of pixels has a y-coordinate is equal to three or zero.
- 5. The method of Claim 1, wherein computing a difference measure for each of a plurality of pixel blocks in the previous image to form a plurality of difference measures using the predetermined pattern of pixels further comprises:

computing an absolute difference between each pixel in both the pixel block and the predetermined pattern with a

corresponding pixel in the macroblock to create a plurality of absolute differences;

summing the plurality of absolute differences to compute the difference measure.

6. The method of Claim 1, wherein computing a difference measure for each of a plurality of pixel blocks in the previous image to form a plurality of difference measures using the predetermined pattern of pixels further comprises:

computing a squared difference between each pixel in both the pixel block and the predetermined pattern with a corresponding pixel in the macroblock to create a plurality of squared differences;

summing the plurality of squared differences to compute the difference measure.

7. A method of determining a motion vector for a macroblock of a present image from a previous image, the method comprising:

selecting a predetermined pattern of pixels in the previous image;

selecting a subpattern of pixels from the predetermined pattern of pixels;

computing a first difference measure for each of a first plurality of pixel blocks in the previous image to form a plurality of first difference measures using the subpattern of pixels;

selecting a first closest matching pixel block from the first plurality of pixel blocks having a lowest first difference measure; and

computing a first accurate difference measure for the first closest matching pixel block using the predetermined paytern of pixels.

- 8. The method of Claim 7, wherein the predetermined pattern of pixels includes a fourth of the pixels of the previous image.
- 9. The method of Claim 7, wherein the y-coordinate modulo four of each pixel in the predetermined pattern of pixels has a y-coordinate is equal to three or zero.
- 10. The method of Claim 7, wherein the subpattern of pixels includes a fourth of the pixels of the predetermined pattern.
- 11. The method of Claim 7, wherein computing a first difference measure for each of a plurality of pixel blocks in the previous image to form a plurality of first difference measures using the subpattern of pixels comprises:

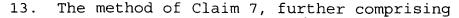
computing an absolute difference between each pixel in both the pixel block and the subpattern with a corresponding pixel in the macroblock to create a plurality of absolute differences;

summing the plurality of absolute differences to compute the first difference measure.

12. The method of Claim 7, wherein computing a first accurate difference measure for the first closest matching pixel block using the predetermined pattern of pixels comprises:

computing an absolute difference between each pixel in both the pixel block and the predetermined pattern with a corresponding pixel in the macroblock to create a plurality of absolute differences;

compute the first accurate difference measure.



computing a second difference measure for each of a second plurality of pixel blocks in the previous image to form a plurality of second difference measures using the subpattern of pixels;

selecting a second closest matching pixel block from the second plurality of pixel blocks having a lowest difference measure; and

computing a second accurate difference measure for a second closest matching pixel block using the predetermined pattern of pixels.

14. The method of Claim 13, further comprising:

selecting the first closest matching pixel block as an origin block when the first accurate difference measure is less than or equal to the second accurate difference measure;

selecting the second closest matching pixel block as the origin block when the second accurate difference measure is less the first accurate difference measure; and

computing the motion vector using the origin block and the macroblock.

- 15. A video encoder configured to determine a motion vector for a macroblock of a present image from a previous image, the video encoder comprising:
 - a frame buffer configured to store the macroblock and the previous image;
 - a first first-phase processing unit coupled to the frame buffer and configured to compute a first plurality of difference measures using a predetermined pattern of pixels;

a comparator coupled to the first first-phase processing unit and configured to select an origin block based on the plurality of difference measures.

- 16. The video encoder of Claim 15, further comprising a cache coupled between the frame buffer and the first first-phase processing unit.
- 17. The video encoder of Claim 15, further comprising a second first-phase processing unit coupled to the frame buffer and configured to compute a second plurality of difference measures using the predetermined pattern.
- 18. The video encoder of Claim 15, further comprising a first second-phase processing unit coupled to the first first-phase processing unit and the comparator, wherein the first second-phase comparator is configured to compute a difference measure using a subpattern of pixels.
 - 19. The video encoder of Claim 18, further comprising:
 second first-phase processing unit coupled to the frame
 buffer and configured to compute a second plurality of
 difference measures using the predetermined pattern; and

a second second-phase processing unit coupled to the second first-phase processing unit and the comparator, wherein the second second-phase comparator is configured to compute a difference measure using the subpattern of pixels.